

PULP & PAPER

December 1989



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DECEMBER

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This issue's dual focus on maintenance and training takes a close look at mill efforts to improve overall manpower efficiency. (Photo of journeyman electrician Melvin Kirschling and apprentice Mary Burns by Dick Durrance courtesy of Consolidated Papers Inc., Wisconsin Rapids, Wis.)

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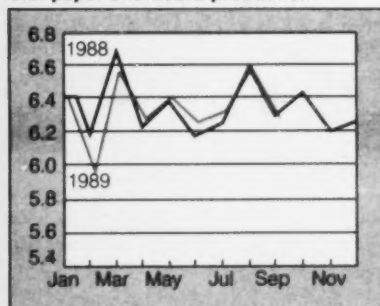
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U.S. paper and board production



U.S. production of paper and paperboard totaled 6.28 million tons in September, down 1.1% from a year earlier, according to American Paper Institute data. The dropoff was mostly due to maintenance and repair downtime taken during September at paperboard mills, API reported. After seasonal adjustments, paper production through the third quarter was down 1.0% from last year, to an annual rate of 37.9 million tpy. The rate of paperboard production was 38.5 million tpy, up 0.7% from 1988.

Among major grades, printing and writing paper was down 2.0% through September, led by declines of 2.4% in uncoated free-sheet and 4.1% in coated paper. The trend rate for coated paper rebounded sharply in the third quarter, however, and lower consumer inventories could lead to better demand for uncoated free-sheet in the months ahead. Containerboard production for domestic use was up 1.2% compared with 1988, while boxboard production for the U.S. rose 0.8%.

Canadian newsprint shipments totaled 830,000 metric tons in September, the same as a year earlier. Woodpulp exports declined 4.8% to 637,000 tons. Operating rates dipped to 93% at newsprint mills and 87% at pulp mills.

	Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
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PAPER & PAPERBOARD PRODUCTION¹

Newsprint	Sept.	517	5.1	6,019	1.0
Uncoated groundwood (s)	Sept.	152	7.8	1,761	8.5
Coated paper (s)	Sept.	611	0.8	7,109	-4.1
Uncoated free-sheet (s)	Sept.	885	-7.5	11,042	-2.4
Other printing/writing	Sept.	127	1.6	1,528	1.1
Total packaging and other paper (s)	Sept.	408	-7.3	4,882	-3.3
Tissue	Sept.	473	3.3	5,618	2.6
Total paper	Sept.	3,172	-1.5	37,958	-1.0
Unbleached kraft paperboard	Sept.	1,596	0.4	19,636	1.2
Semichemical medium	Sept.	461	-2.3	5,700	1.2
Bleached paperboard	Sept.	351	-1.1	4,544	0.5
Recycled paperboard	Sept.	695	-2.3	8,638	-2.2
Total paperboard	Sept.	3,103	-0.8	38,519	0.7
Total U.S. paper and paperboard output	Sept.	6,275	-1.1	76,477	-0.2

PULP, WASTEPAPER & FIBER²

Total U.S. woodpulp production	Aug.	5,303	0.7	62,518	2.1
Market pulp production	Aug.	757	0.3	8,896	3.8
Wastepaper consumption at paper/board mills	Aug.	1,649	1.4	19,039	0.8
Pulpwood consumption (cords)	Aug.	8,498	6.9	98,865	3.7

CONVERTED PRODUCTS STATISTICS³

Corrugated box shipments (billion ft ²)	Sept.	25,354	-3.1	234,895*	1.2
Containerboard inventories at U.S. box plants and mills	Sept. 1	2,664	-2.5		

INTERNATIONAL TRADE⁴

U.S. paper imports (including products)	Aug.	1,210	11.7	12,864	0.2
Imports of Canadian newsprint	Aug.	767	9.1	8,020*	-6.2
U.S. paper exports (including products)	Aug.	560	20.4	6,297	13.6
Exports of unbleached kraft linerboard	Aug.	201	11.7	2,245	4.6
Exports of woodpulp	Aug.	534	7.4	6,375	18.2
Norscan pulp inventories*	Sept. 30	994	29.6		
Norscan pulp operating rates*	Sept.	93%	101%	96%	98%

CANADIAN STATISTICS⁵ (reported in metric tons)

Total newsprint shipments	Sept.	830	0.0	7,180*	-2.3
Operating rates	Sept.	93%	96%	95%	99%
Inventories held by U.S. consumers	Sept. 30	1,303	-19.9		
Other paper/board shipments	Sept.	570	6.3	5,031	0.4
Woodpulp shipments (export only)	Sept.	637	-4.8	5,865	-3.4
Operating rates	Sept.	87%	88%	93%	96%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

Newsprint: Price erosion eases in last quarter but further capacity in 1990 will add pressure

Grade structure: Newsprint is commonly sold in the U.S. in 28-lb to 32-lb. Although the industry has slowly been drawn to the lighter basis weights, this has been somewhat stalled by increased emphasis on printing quality and a sluggish acceptance of flexographic printing. Standard newsprint is still considered to be 30-lb, with brightness in the 55 to 61 range. Of total newsprint consumed in the U.S. in 1988, 74.7% was used by daily newspapers and the rest was sold to customers including weeklies, commercial printers, shopping news, and government publications, according to the American Newspaper Publishers Assn.

Production/capacity: Newsprint output in 1989 suffered from a two-pronged attack. U.S. consumption was hurt by poor advertising lineage, while total North American supply grew with the addition of five newsprint machines in one year and the expectation of another seven starting up over the next two years.

U.S. mill shipments through the first nine months of 1989 were up 1.3% from the previous year, according to the Canadian Pulp & Paper Assn. Canadian shipments through the first three quarters were down 2.3%. At the same time, U.S. consumption dropped a slight 0.4%.

Canadian mills supplied 55.8% of U.S. newsprint requirements in the first nine months of 1989, down from the 58.6% supply ratio of a year earlier, according to CPPA. Through the third quarter, U.S. overseas shipments were up a robust 47.6% to 388,000 metric tons, while Canadian exports were up 13.4% to 1.283 million tons.

U.S. imports from areas other than Canada plunged 38.1% through the first nine months of 1989 compared with 1988 and represented 2.6% of total imports in that period. At the same time, U.S. domestic sources of supply met 40.8% of demand, a slight increase from a year earlier.

In 1988, Canadian newsprint capacity was 10.325 million metric tons, with the U.S. at 5.687 million tons. U.S. mills produce most of North America's approximately 2.2 million tons of recycled newsprint, while only

one newsprint mill in Canada uses wastepaper as a raw material, though a second Canadian mill will start up in 1990.

Outlook: Industry forecasts indicate newsprint consumption should be slightly higher in 1990, following two relatively flat years. Inventory build-up in 1988 has taken much of 1989 to work down, reaching levels lower than in several years. Consumers saw no need to maintain high stocks, as the supply of newsprint should remain plentiful through 1991. At the same time, publishers continued to conserve to keep costs down during these lean times for newspaper advertising lineage. However, Canadian labor negotiations in spring 1990 will probably spark some inventory rebuilding.

North American newsprint capacity will rise by about 2.4 million metric tons during 1989-91, with 12 new machines starting up during that time. Of these, three machines will produce recycled newsprint.

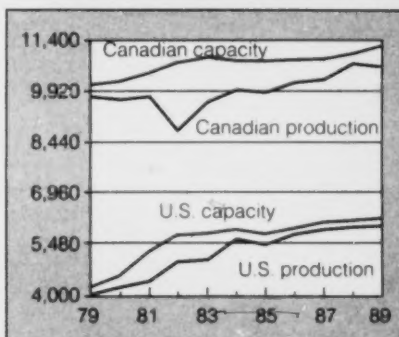
In total, about 370,000 tpy of Canadian capacity was idled permanently or indefinitely during 1989, while the downtime in the U.S. was minor. More downtime, conversions, and closures are expected in 1990 as conditions become more competitive.

Pricing: List prices remained unchanged in 1989. However, almost nonstop erosion occurred in transaction levels. A \$30/metric ton price hike slated to go through in the U.S. East on Feb. 1 was rolled back and eventually abandoned. No announced price increases are slated for 1990; instead, there are likely to be further drops in actual prices.

Transaction levels began the year at modest discounts of 5% to 6% but by year-end had risen to 20% and higher for the largest chain buyers. U.S. East list price was \$650/metric ton; West was \$630/metric ton minus a 5% "full-contract allowance."

List price history is as follows (U.S. East, contract, year-end, per metric ton): 1974, \$259; 1975, \$284; 1976, \$314; 1977, \$331; 1978, \$353; 1979, \$413; 1980, \$441; 1981, \$500; 1982, \$468; 1983, \$500; 1984, \$535; 1985, \$535; 1986, \$500; 1987, \$570; 1988, \$650; 1989, \$650.

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

U.S.	1987	1988	1989e
Production ¹	5,842	5,982	5,998
Capacity ¹	6,006	6,116	6,269
Utilization rate	97.3	97.8	95.7
Apparent U.S. consumption	14,547	14,357	14,098
lb/capita	119.5	116.8	113.6
GNP ratio	3.41	3.24	3.12
Canada			
Production ²	10,658	10,989	10,809
Capacity ²	10,940	11,117	11,381
Utilization rate	97.4	98.8	95.0

e = Pulp & Paper estimate.

1. American Paper Institute.

2. Canadian Pulp & Paper Assn.

TOP U.S. PRODUCERS (000 tpy)

Company	Annual capacity		Market share (%)
	U.S.	Canada Total	
1. Abitibi-Price	385	1797	12.4%
2. Canadian Pacific ¹	22	1687	9.7%
3. Bowater ²	1039	247	7.3%
4. Fletcher ³	—	1232	7.0%
5. Stone-Consolidated	N	1050	6.0%
6. Kruger	N	871	4.9%
7. Champion	858	N	4.9%
8. Quebec & Ontario	N	839	4.8%
9. Boise Cascade	577	250	4.7%
10. Kimberly-Clark ⁴	419	378	4.5%

Market share of top five companies:

42.3%

Market share of top ten companies:

66.0%

Total North American capacity (1989):
17.85 million tons

1. Created by merger of CIP Inc. (100% owned) and Great Lakes Forest Products Ltd. (54.3% owned) in 1988. Includes estimated 1989 output from Gold River Newsprint Limited Partnership and Pondera Paper Co. (50% owned) mills. 2. Includes Catawba Newsprint Co. (51.0% owned) and Bowater Mersey Paper Co. Ltd. (51.0% owned). 3. Combined operations of Crown Forest Industries (100% owned) and British Columbia Forest Products Ltd. (69% owned) in 1988. Includes startup of new machine at Mackenzie, B.C., in March 1989. 4. Includes Spruce Falls Paper & Paper Co Ltd. (50.5% owned).

SALES AND EARNINGS

U.S. paper companies report flat profits in third quarter

U.S. paper industry profits continued to lose steam in the third quarter, reflecting softer demand and prices for many grades, according to a *Pulp & Paper* survey of about 30 companies. Earnings rose 0.3% from year-earlier levels, compared with a 22% increase in the first quarter and a 9.3% increase in the second quarter. Sales rose 10.1% to \$24.0 billion. Last year's third quarter was the most profitable quarter in 1988, making it tough this quarter for companies to show a year-to-year improvement with today's softer markets.

The weaker performance reflects discounting in the printing paper sector, continued pressure on newsprint prices compounded by new capacity coming onstream, a failed linerboard price hike, and high wood costs for mills operating in the Pacific Northwest. Pulp producers and bleached board producers fared well in the quarter, although there were some signs of discounting on pulp toward the end of the period. Companies with building products operations in the Northwest benefited from higher lumber and woodchip prices.

Georgia-Pacific Corp. enjoyed the largest increase in profits (56.1%) on sales of \$2.6 billion. The excellent showing was attributed to record operating profits in the building products area of \$162 million vs \$120 million in the 1988 quarter. Pulp and paper profits rose to \$236 million vs \$150 million a year ago. "Prices are higher than in the year-ago quarter, and our capacity increased, primarily due to the Brunswick acquisition and the startup of the second Port Hudson, La., paper machine," chairman and CEO T. Marshall Hahn Jr. explained. He said demand weakened during the summer, especially in the printing paper and containerboard markets. "Performance in the consumer tissue market as well as market pulp continues to be encouraging," he noted.

Weyerhaeuser Co.'s earnings rose 15% on sales of \$2.6 billion. The company said it expects to see the impact of these divestitures on fourth-quarter earnings. Weakening paper prices, the reduced volume of log exports, and the strong dollar are having a

negative impact on Weyco's business.

Publication papers weaken. Newsprint producers seem to be struggling. Bowater Inc.'s earnings fell 11.4%. The company said that while newsprint consumption for both the quarter and the year to date was almost unchanged from 1988 levels, increased price discounting from the fear of overcapacity and the costs of starting up two new pulp mills combined to reduce newsprint operating income in the quarter by 48% to \$16.2 million. Jefferson Smurfit Corp. said that income from its two newsprint mills in Oregon declined 41% over the first nine months, primarily due to discounting.

Printing paper prices also weakened as customers worked down inventories and the market tried to ab-

sorb new capacity. Producers are hopeful that the fourth quarter will be better. Boise Cascade Corp.'s earnings fell 12.7%. The company said demand for uncoated white paper, coated grades, and newsprint slowed simultaneously with new capacity for these grades coming onstream. Mead Corp.'s profits plunged 59% in the quarter. The company said that it was having a good year but that divestitures (including the sale of a 50% share in Brunswick Pulp) and an acquisition of a publishing company make any year-to-year comparisons "difficult."

Consolidated Papers Inc.'s profits rose 5.9%. The company said that the market for coated printing paper strengthened during the third quarter.

U.S. paper industry results.

Companies	Third quarter (\$000)			
	Sales	Change 1989/88	Earnings ¹	Change 1989/88
Boise Cascade Corp.	\$1,100,000	10.0%	\$62,800	-12.7%
Bowater Inc.	360,067	3.4	35,458	-11.4
Champion International	1,318,488	2.6	102,062	-16.6
Chesapeake Corp.	205,702	9.2	12,448	-12.9
Consolidated Papers Inc.	228,724	3.1	36,519	5.9
Federal Paper Board Co.	285,337	16.0	49,099	41.5
Georgia-Pacific Corp.	2,646,000	9.8	178,000	58.1
P.H. Giffelter	143,747	-1.3	21,973	11.5
Great Northern Nekeosa	980,500	4.6	85,700	-7.2
International Paper Co.	2,900,000	20.6	214,000	6.5
James River Corp. (7/30)	1,470,478	6.0	57,250	1.8
Jefferson-Smurfit Corp.	331,055	7.3	31,105	-16.2
Kimberly-Clark	1,452,700	6.2	108,800	20.2
Longview Fibre Co. (7/31)	177,849	4.5	18,097	-35.0
Louisiana-Pacific Corp.	510,100	10.2	51,500	39.9
Mead Corp.	1,197,500	2.0	69,700*	-59.1
Moelnes Paper Corp.	57,505	-2.1	2,910	-5.9
Pentair Inc.	300,082	47.2	7,957	-21.3
Pope & Talbot Inc.	162,076	19.8	13,224*	56.0
Pottlatch Corp.	318,395	16.3	35,133	24.2
Scott Paper Co.	1,249,300	8.6	76,900	-1.3
Sonoco Products Co.	402,527	-1.6	25,767	10.1
Stone Container Corp.	1,373,300	34.3	70,400*	-20.9
Temple-Inland	479,900	5.6	55,600	4.9
Union Camp Corp.	687,320	-0.4	76,045	1.3
Weiss Paper Mills Co. (8/31)	83,031	14.3	4,372	5.8
Westvaco Corp. (7/31)	573,131	7.3	56,507	7.1
Weyerhaeuser Paper Co.	2,574,407	9.1	166,836*	15.2
Willamette Paper Co.	486,556	10.3	52,883	35.7
Total	\$24,045,757	10.1%	\$1,777,045	0.3%

1. Income after taxes, from continuing operations, excluding most significant nonrecurring items in both years where possible.
2. Mead: 1989 quarter includes a gain of \$16.5 million from sale of Mead Release Products. 1988 quarter includes a gain of \$100.9 million on sale of stake in Brunswick Pulp. Pope & Talbot: 1989 quarter includes a gain of \$3.55 million from sale of sawmill. Stone: 1989 quarter includes a net gain of \$9 million. Weyerhaeuser: 1989 quarter includes a \$3.6-million pretax loss associated with the initial phase of the company's relocating plan offset by a \$48.99-million gain on sale of common stock by a subsidiary.

Tissue demand strong. Scott Paper Co. said earnings from its U.S. tissue business rose 20% and set a new record despite higher pulp costs. The S.D. Warren division was hurt by weakness in uncoated grades, but demand continues to be strong for its lightweight coated paper made in Skowhegan, Maine.

James River Corp.'s profits inched upward 1.8% on sales of \$1.5 billion. This was partially due to the towel and tissue division, which experienced good market demand and pricing gains. Its communication paper business showed a decrease in earnings related to rising woodchip costs and excess industry capacity.

Earnings for Pope & Talbot Inc. jumped 56% to set a new record for the quarter. The company said its Consumer Products Div. had its best results in over two years. The company expects to have a record year in 1989.

Mediocre results in linerboard. Union Camp Corp.'s earnings were up 1.3% on flat sales of 0.4%. The company said that discounting in uncoated business paper hurt earnings. It also suffered some disruption at its kraft paper and liner mill in Savannah, Ga., and its fine paper mill in Eastover, S.C., because of Hurricane Hugo, although neither mill suffered serious damage.

Temple-Inland Inc.'s profits rose 4.9%. It said that although box shipments were up slightly, prices for boxes stayed the same while costs increased. The company expects 1989 to be its third consecutive record year of earnings.

Willamette Industries Inc.'s earnings jumped 35.7%, partly due to record prices for lumber and plywood. The company said that although prices for containerboard are showing weakness, demand is good for corrugated containers and grocery bags.

Longview Fibre Co. said its woodchip costs are about 50% higher than a year ago. Its box plants are having to pay higher prices for containerboard, reducing year-to-date operating profits of this business by 50%.

Bleached board boom. This grade is one of the bright spots in the market. Federal Paper Board Co. Inc. enjoyed a 41.5% increase in earnings. The company said that completion of Phase I of a capital spending program yielded significantly higher earnings at its Augusta, Ga., bleached board mill.

Canadian earnings slide 37%; newsprint weakens

Canadian pulp and paper companies saw a continued decline in profits in the third quarter. Earnings fell 37.4% from the same period a year ago while sales increased 1.1% to C\$5.6 billion. This followed a 19.1% decrease in earnings in the second quarter and a 14.1% decline in the first quarter. The usual suspects were responsible: a stronger Canadian dollar, weak newsprint markets, and higher wood costs in British Columbia. The Canadian dollar was valued at US\$0.84 during the first nine months vs \$0.81 for the year-earlier period.

Abitibi-Price Inc.'s earnings fell 69% in the quarter to C\$13.6 million. The company said sales volume of its newsprint group was down 8% from last year. "Even though cost increases were contained below inflation levels, the combination of exchange rates and a severe erosion of transaction prices resulted in a significant decline in operating profits," the company noted. Bernd K. Koken, chairman and CEO, said he does not expect any short-term strengthening in the newsprint market as more capacity comes onstream and demand remains flat for the second consecutive year. Markets for groundwood paper also softened. The coated paper division experienced a small loss in the quarter as a result of very weak markets in

Canada, increasing competition from offshore, and a major capital project.

MacMillan Bloedel Ltd.'s earnings fell 7.2% to \$818 million because of weakening newsprint markets and rising costs in British Columbia, but it said demand for pulp and lumber remains strong.

Canadian-Pacific Forest Products Ltd.'s earnings fell 51% in the period. The problem with newsprint was compounded by weaker markets in paperboard, packaging products, and white paper.

Domtar Inc.'s earnings fell 67%. Domtar said operating profits for its pulp and paper business declined to \$26 million from \$39 million in third-quarter 1988 because improved results for the "rehabilitated Windsor, Que., mill were more than offset by lower market pulp shipments and lower selling prices for newsprint and groundwood specialties."

Canfor Corp.'s earnings rose 18.2% to \$26.6 million. Chairman and CEO Peter J.G. Bentley said, "Demand and prices for northern softwood kraft pulp remained strong during the quarter despite indications of some softening for other types of pulp."

Repap Inc.'s earnings fell 16% on increased sales of \$331.8 million. Repap said the exchange rate problem alone reduced net income by \$4 million in the quarter.

Canadian paper industry results.

Companies	Third-quarter earnings (C\$000)			
	Sales	Change 1988/88	Earnings ¹	Change 1988/88
Abitibi-Price Inc.	\$816,400	0.4%	\$13,600	-69.4%
Canadian Pacific	707,600	-7.7	45,100	-51.3
Canfor Corp.	254,400	-5.4	26,600 ²	18.2
Cascades Inc.	171,725	23.7	3,706 ²	-76.8
Domtar Inc.	622,000	-1.0	9,000	-66.7
Donohue Inc.	152,831	-3.6	9,656	-43.3
Fletcher Challenge	359,500	2.4	28,500	-28.9
MacMillan Bloedel Ltd.	818,000	-0.8	85,400	-7.2
Noranda Forest Inc.	1,199,000	-0.2	45,000	-31.8
Repap Enterprises Inc.	331,800	27.6	19,600	-15.9
Rolland Inc.	107,700	-2.3	(2,813)	-240.2
Scott Paper Ltd.	124,991	53.9	3,377	-26.2
Total	\$5,985,947	1.1%	\$298,726	-37.4%

1. Income after taxes, from continuing operations, excluding most significant nonrecurring items in both years.
2. Canfor: 1988 quarter excludes gain of C\$9.4 million. Cascades: 1988 quarter includes a pretax gain of C\$3.37 million.

INTERNATIONAL PAPER POSITIONS ITS CONTAINERBOARD MILLS FOR THE 1990s

Incremental expansion projects at four IP mills could total \$300 to \$500 million over 1989-92 period and add 900 tpy

By WILL MIES, Executive News Editor

After spending more than \$1 billion on modernization during the late 1970s and early 1980s, International Paper Co.'s Container Div. has been stressing productivity and efficiency rather than just volume. Although not the largest producer of containerboard and corrugated boxes—Stone Container Corp. is larger and Great Northern Nekoosa Corp. and Weyerhaeuser Co. are very close in size—IP believes that its four primary mills are among the most efficient in the industry.

Last year, the company's mills produced 2.1 million tons of containerboard, which was 8% of total U.S. production and 3% of total world production. IP's corrugated box plants produced over 1.6 million tons of corrugated boxes worldwide, giving it about a 5% market share in the U.S. and making the company the number one supplier in Western Europe with 7% of the market.

"We produced over 2 million tons of board on only five paper machines—no other company even comes close," noted Mike Harwood, general manager of the company's containerboard division. "Three of our five machines have trim widths in excess of 340 in., which is about 100 in. wider than the average U.S. linerboard machine, and in each of the past five years we established a new production record."

He provided a brief rundown on each of the company's four major containerboard mills:

- The Mansfield, La., mill, which came onstream in 1981, remains the last U.S. kraft linerboard mill built. "The decision to build Mansfield, which cost \$600 million, was not an easy one, and we endured some tough years during recessionary periods in 1982, 1983, and 1985," Harwood noted. "Since then, however, Mansfield has become an exceptionally profitable operation. In fact, we believe that Mansfield's cash cost position is the lowest in the industry." The mill currently has capacity to produce 500,000 tpy of linerboard and 375,000 tpy of semichemical medium on its two 348-in.-trim machines.

- IP acquired its Pineville, La., mill in the late 1970s when the company purchased Bodcaw Corp. "Pineville has an excellent cost structure and is probably the only

U.S. mill using a 100% virgin southern pine furnish," Harwood said. The mill has used its quality advantage to develop several specialty linerboard grades. The 260-in.-trim Pineville machine has a capacity of about 375,000 tpy.

- The Gardiner, Ore., mill is one of the lower-cost kraft liner mills on the West Coast and not only supplies the company's box plants but also serves quality-sensitive export markets, including Japan and China. Its 240-in.-trim machine has a capacity of 350,000 tpy.

- IP's Vicksburg, Miss., mill, long regarded as one of the most efficient mills in the industry, recently completed a \$50-million modernization. Using "advanced densification" technology, the rebuild of the 345-in.-trim Vicksburg machine includes addition of new sequential Voith Flexonip presses—the first such double wide-nip press installation in the U.S.

The rebuilt machine will produce board with superior moisture control and stacking strength. Capacity will be increased by 83,000 tpy to 568,000 tpy, and energy costs will be reduced. With this enhancement, Vicksburg will secure its long-held position as the single most productive linerboard machine in the world, according to Harwood.

COST REDUCTION EFFORTS. IP's massive restructuring and modernization program in the late 1970s and early 1980s involved the closure of two mills (Springhill and Bastrop, La.), sale of its Panama City, Fla., mill, and reconfiguration of the Georgetown, S.C., mill to production of bleached pulp and paper grades.

Since then, the company's efforts have been directed

TABLE 1: U.S. containerboard capacity (millions of short tons).

Company	Liner	Medium	Total	Share (%)
Stone Container Container Corp.	2.8	1.0	3.8	14
International Paper Co.	1.7	.4	2.1	8
Weyerhaeuser Co.	1.4	.7	2.1	8
Great Northern Nekoosa Corp.	1.2	.9	2.1	8
Jefferson Smurfit Corp.	1.4	.6	2.0	7
Temple-Inland Inc.	1.4	.5	1.9	7
Union Camp Corp.	1.3	—	1.3	5
All others	8.9	8.4	11.7	43
Total	18.6	7.5	26.1	100

1. April, 1988.
Source: International Paper Co.

Mike Harwood,
general manager of
International Paper's
Containerboard Div.



primarily toward cost reduction and mix improvement. "Our mill system has managed to increase linerboard and medium capacity by 930 tpd since 1982 without major capital. This is equivalent to obtaining a new world-scale mill," Harwood noted.

In addition, IP estimates that it has actually reduced its cost per ton of producing containerboard by 16%. "Some of this was due to declining energy and fiber costs, but much of it was the result of our cost reduction program," Harwood said.

IP believes that Vicksburg and Mansfield are two of the five lowest-cost linerboard machines in the U.S. industry. Pineville, despite an extremely complicated product mix, is also one of the more cost-efficient mills in the industry (Figure 1). Gardiner also holds a low cost position on the West Coast, although it has a less marked advantage over competitors in the region.

CAPITAL SPENDING FOR THE 1990s. In addition to Vicksburg, the company is also planning and engineering incremental expansions at its three other mills. The capital commitment for all four projects (including Vicksburg) is in excess of \$300 million and could reach \$500 million over the 1989-92 period, according to Harwood. "We expect to generate another 900 tpd from our facilities—at a capital cost well below that associated

with new mills or new machines."

Following the Vicksburg rebuild, International Paper expects to use similar advanced densification technology at its other containerboard mills. The technology should enable IP to produce a sheet with only 1% moisture variation (meeting CID specifications), better smoothness, and improved porosity. Additionally, board will be wound into very tight solid rolls for high-speed corrugators, he noted.

Although the sequence of future densification projects has not been announced, the Gardiner, Ore., mill may be moved up in priority because of the need to reduce its wood costs, he indicated. Woodchip costs in the Northwest have more than doubled this year, partly due to strong demand from pulp mills, environmental constraints on timber harvesting, and demand for chips from the Far East.

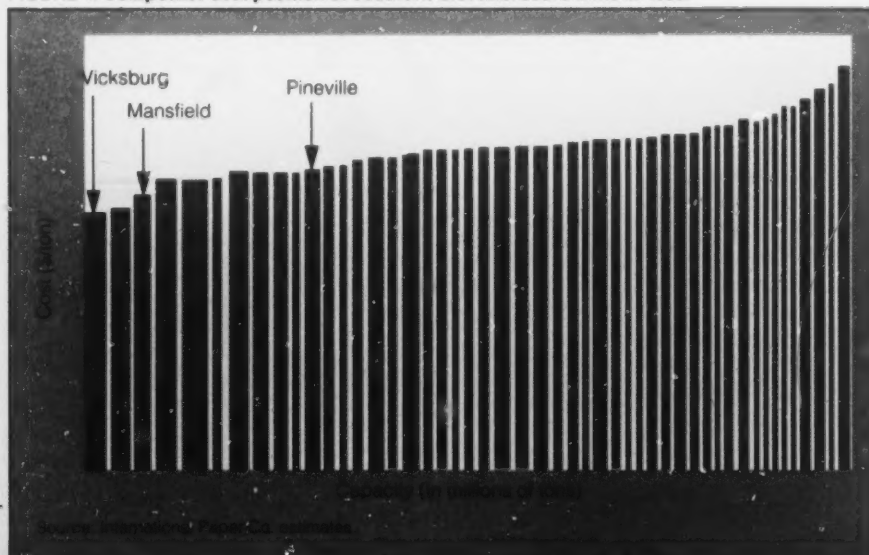
The company will also be spending at the converting level to expand its international box plants and streamline its U.S. box plant network. "In the U.S., we have closed a few unprofitable box plants, and we may sell or close other plants that do not meet our long-term strategic goals," Harwood said. IP earlier this year shut down a box plant in Manchester, N.H., but recently opened a new box plant in El Paso, Texas, which serves a fast-growing market in the southwestern U.S. and northern Mexico.

CHANGING MARKET REQUIREMENTS. International Paper is positioning its containerboard mill and corrugated box system to better serve growing market demands for high performance and more visual appeal, according to Harwood. Pineliner high-performance linerboard, which Pineville began to produce two years ago, has been the most successful new product ever introduced by IP's containerboard division. It permits box makers either to increase stacking strength or to save money by substituting a lighter Pineliner grade for a standard liner without losing compression strength. "Many box makers have used Pineliner to save 5% to 8% of material costs, so you can understand why this product has been so successful," stated Harwood.

The company's newly introduced Classicpak box uses Pineliner to provide 20% to 25% better stacking strength than with conventional iced packed poultry boxes, which is a big advantage in a market that consumes 300,000 tons of corrugated boxes annually.

Harwood believes that by 1991, 20% of all boxes con-

FIGURE 1: Competitor cost position of southern U.S. linerboard mills in 1985.



sumed in the U.S. will use high-performance materials, up from the current figure of 5% to 6%. Although many producers have begun to offer board with certain ring crush values, "high performance" also means having a sheet with good moisture profile, printability, and, above all, consistency, he said.

The move to high-performance containerboard is being driven by customer requirements rather than any movement to change Rule 41 or Item 222 freight classification rules, he indicated. Only about 35% of boxes made in the U.S. currently comply with the freight classification standards, he noted.

MORE VISUAL APPEAL. In addition to higher compression strength, customers are also interested in boxes offering more visual appeal. Harwood estimated that currently 22% of all corrugated boxes used in the U.S. have some form of visual appeal and that this will grow to more than 30% by the early 1990s. This growth would also include brown boxes that use three- and four-color graphics and boxes with bleached linerboard facings.

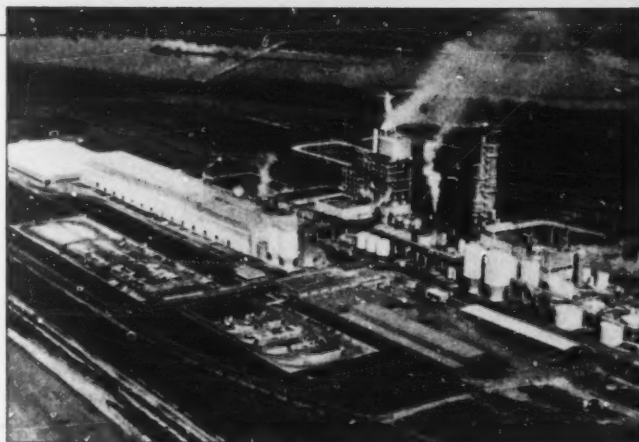
Harwood believes that much of the growth in visual appeal boxes will be in improved direct or postprinting of boxes rather than in preprinting. "U.S. converters have been adding a lot of three- and four-color flexo presses and diecutters, and our plants are no exception," he noted. For sophisticated multicolor work, however, IP has installed a modern preprint press at Shreveport, La.

For higher-quality graphics, IP produces Colorbrite bleached linerboard at its Georgetown, S.C., mill. It also offers an unbleached Colorbrite grade, which the company says is 20% smoother than standard liner, with high ink holdout and excellent formation properties.

IP was the largest producer of mottled white linerboard until 1980 but withdrew from the market when its Georgetown, S.C., mill was reconfigured. As indicated earlier, the company may reenter the mottled white market and begin producing white-top grades at its Pineville, La., mill.

In 1988, the U.S. consumed 1.068 million tons of mottled white linerboard (about 8% of total linerboard consumption) and 163,000 tons of solid bleached linerboard (1% of total consumption). Since most of this was used on only outer facings, the percentage of boxes offering visual appeal is considerably higher.

Mottled white consumption did not increase last year, mainly because of supply limitations, although bleached linerboard demand jumped sharply. Harwood believes that good opportunity exists in the U.S. for a white-top sheet, which would fill a gap between mottled



IP recently completed a \$50-million modernization of its Vicksburg, Miss., linerboard mill, including installation of sequential wide-nip presses.



IP's Pineville, La., linerboard mill, which produces specialty linerboard grades, is also in line for a major modernization program.

white and clay-coated unbleached kraft board.

FAVORABLE MARKET OUTLOOK. Despite last spring's unsuccessful price increase, domestic linerboard demand is still quite good, according to Harwood. However, he noted that there is "sufficient new capacity so that we don't expect to see the shortages and late deliveries that plagued box makers in the last two years."

IP estimates that U.S. linerboard capacity has been growing at an annual rate of close to 4% due to the large number of incremental expansion projects under way—even though only two new linerboard machines have been announced.

Harwood is optimistic about longer-run export demand for U.S. linerboard, particularly from the Far East. IP estimates the 1989 world market for containerboard at 69 million short tons, of which about 38% is recycled. The U.S., with 35% of total world consumption, is the largest consuming region, followed by the Far East and Western Europe. By the year 2000, the Far East should pass the U.S. in total containerboard consumption. ■

TABLE 2: International Paper containerboard mill system.

Mill	Train width	Capacity (000 tpy)
Meriden, Conn.	348 in.	600 (liner)
Vicksburg, Miss.	348 in.	375 (medium)
Pineville, La.	348 in.	485 (liner)
Pineville, La.	280 in.	375 (liner)
Shreveport, La.	240 in.	350 (liner)

Source: International Paper Co.

Buyers Guide 1990